Introduction: Neopterin concentrations usually correlate with immune activation and are significant predictors of chronic infections, various types of cancer and CVD. In adults, an association between increased BMI and neopterin concentrations was observed, but although there is evidence for a proinflammatory state accompanied by impaired vascular endothelial function in childhood and adolescence, such data are still scarce.

Method: We investigated serum neopterin concentrations (ELISA, BRAHMS, Hennigsdorf, Germany) as well as tryptophan metabolism (HPLC) in 356 overweight and obese (aged 11·3 (SD 2·97) years; f = m), otherwise healthy children and thirty-two non-obese controls.

Results: BMI differed significantly between obese and non-obese probands (28 (SD 5·64) *v.* 18 (SD 2·19) kg/m^2, $U = 9·24$, $P < 0000·1$, Mann–Whitney *U*-test). Neopterin concentrations were similar in both groups, although low as compared with reported adult data. By contrast, tryptophan concentrations were significantly lower in the obese (74·7 + 18·8 qmol/l) *v.* non-obese subjects (80·7 + 12·7 qmol/l, $U = 2·384$, $P = 0·017$), while there was no difference in kynurenine concentrations.

Conclusions: Obesity in juveniles is not associated with increased neopterin concentrations suggesting that obesity at least in the early course of the disease does not lead directly to Th1-type immune activation and associated CVD. Only in the later course a switch to Th-1 type immune activation and associated CVD may take place. Chronic infections or other cofactors might be important to trigger cytokine production and elevated neopterin concentrations at the later stage.

doi:10.1017/S136898001200198X

24 – May acanthosis nigricans be a predictor of insulin resistance in obese adolescents?

R Gomes[1], M Pinto[1], P Nogueira[2] and H Fonseca[1]

[1]Department of Paediatrics, Paediatric Obesity Clinic, Hospital de Santa Maria, Lisboa, Portugal: [2]Epidemiology Division, Instituto de Medicina Preventiva, Faculdade de Medicina de Lisboa, Portugal

Introduction: Acanthosis nigricans (AN) is a condition characterized by hyperpigmented, papillomatous and hyperkeratotic skin and is associated with obesity and impaired glucose tolerance. The purpose of the present study was to explore a potential association between BMI, insulin resistance and AN.

Method: A retrospective review of the files of obese adolescents at their first visit to the clinic was conducted. The sample was divided considering the presence or absence of AN. Age, BMI (*Z*-score) and fast glucose and insulin blood levels were compared between the two groups using a bivariate analysis. The insulin resistance index was calculated based on the homeostasis model assessment (HOMA).

Results: Data from 116 obese adolescents, forty-seven males, median age 13 years, was collected. AN was found in fifty-three subjects: cervical location (21), axilar location (3) and both (15). In fourteen adolescents the location was not specified. Mean BMI *Z*-score was 3·67 within the AN group and 3·03 among those without AN. A mean HOMA of 4·02 was found in the AN group compared with 2·72 among those without AN. A significant association was found between HOMA ($P = 0·009$), BMI *Z*-score ($P = 0·01$) and AN.

Conclusions: According to the results, BMI *Z*-score and HOMA are significantly higher once AN is present. Therefore, the presence of AN should be routinely assessed in obese adolescents. Future research should focus on the association between the improvement of both BMI and HOMA and the regression of AN.

doi:10.1017/S1368980012001991

25 – A case of severe obesity with metabolic syndrome in an adolescent: diagnosis and management

B Cammarata[1], M Bove[1], B Mariani[1], S Di Candia[1], F Meschi[1] and G Chiumello[1]

[1]Department of Paediatrics, Endocrine Unit, San Raffaele Scientific Institute, Vita Salute San Raffaele University, Milan, Italy

We report the case of a 13-year-old boy with severe obesity (BMI > 99°p.le), polyuria and polydipsia. Physical examination showed abdominal adiposity, acanthosis nigricans (neck, limb folds and trunk) and no signs of Cushing syndrome. Laboratory examination showed fasting hyperglycaemia (293 mg/dl), HbA1c 12·8 %, negative autoantibody screening concerning type 1 diabetes mellitus and glycosuria without ketonuria. Fasting insulin and C-peptide values and after oral-glucose tolerance test were compatible with type 2 diabetes mellitus. Lipid state was normal (total cholesterol 147 mg/dl, HDL-cholesterol 35 mg/dl and triglycerides 159 mg/dl). Further specific examinations showed: left ventricle hypertrophy, borderline hypertension and hepatic statosis. The stabilization of glycemic values was achieved with a 500 mg metformin-based therapy (three times daily), progressively increased up to 2000 mg, and a 2200 kcal diet. As a result, the blood glucose values improved as well as the glycated Hb (reduced to 7·9 %) while the weight increased. After 2 years, due to the low compliance to the diet, the child was admitted within a multidisciplinary structure (pharmacologic therapy, aerobic fitness, nutritional program) where he stood three times, one month per time. The results were a weight decrease and an improvement of the glycolipidic metabolism.

However, back to home, the obesogenic context and the low-diet-compliance increased the child's weight up to a 60 BMI and worsened the glycolipid profile, triggering a new admission in our department and, after the ethical committee approach, he started therapy with Exenatide (10 mg × 2 injections/d) in addition to the metformin. Two months later a weight and hungry-attitude decrease was achieved (−10 kg).

doi:10.1017/S1368980012002005

26 – Single nucleotide polymorphisms of ADIPOQ gene and metabolic syndrome in European adolescents

E Erhardt[1], S Bokor[1], A Meirhaeghe[2,3,4], RJ Ruiz[5], K Widhalm[6], M Gonzalez-Gross[7], LA Moreno[8], D Molnar[1] and J Dallongeville[2,3,4] on behalf of the HELENA Study Group

[1]Department of Paediatrics, University of Pecs, Pecs, Hungary: [2]Institut Pasteur de Lille, Lille, France; [3]INSERM, U744, Lille, France: [4]Université Nord de France, Lille, France: [5]Unit for Preventive Nutrition, Department of Biosciences and Nutrition at NOVUM, Karolinska Institutet, Stockholm, Sweden: [6]Department of Pediatrics, Medical University of Vienna, Vienna, Austria: [7]Facultad de Ciencias de la Actividad Fisica y del Deporte – INEF, Universidad Politecnica de Madrid, Madrid, Spain: [8]GENUD Research Group, Escuela Universitaria de Ciencias de la Salud, Universidad de Zaragoza, Zaragoza, Spain

Introduction: Adiponectin may affect vascular function and mediate obesity-related vascular disorders including hypertension, diabetes mellitus and atherosclerosis. In the present study, we investigated the effect of polymorphisms (SNP) in the adiponectin (*ADIPOQ*) gene on components of metabolic syndrome (MS) in European adolescents.

Method: Altogether fifteen SNP were genotyped by Illumina in the HELENA Study (n 1155, 12–17-year-old European adolescents). The studied phenotypes were BMI, waist circumference, blood pressure and plasma triglyceride, cholesterol and glucose levels.

Results: rs822393 (frequency: 0·21), rs7649121 (frequency: 0·15) and rs17366743 (frequency: 0·02) were associated with lower plasma HDL-cholesterol in adolescents ($P = 0{\cdot}001$, $P = 0{\cdot}00008$ and $P = 0{\cdot}001$, respectively). Two SNP (rs3821799, rs3774261) were associated to have higher risk of increased waist/hip (W/H) ratio ($P = 0{\cdot}003$ and $P = 0{\cdot}001$, respectively). The average number of risk factors of MS was significantly lower ($P < 0{\cdot}003$) in carriers of at least one minor allele of rs822396 compared with the children who were homozygous for the common allele.

Conclusions: Using a candidate gene approach, we were able to detect significant associations between SNP of the ADIPOQ and components of MS in adolescents. These data may highlight the role of these adipokine in MS, especially in adolescents.

Funding: The HELENA Study received funding from the European Union's Sixth RTD Framework Program (Contract FOOD-CT-2005-007034) and the Spanish Ministry of Education (EX-2007-1124).